

# Whitebark Pine

*Pinus albicaulis*

BY LAURA ROADY

Last summer while hiking a ridgeline in the Purcell Mountains north of Libby, I spotted a whitebark pine growing from a rock crevice with barely enough soil to cover its roots. Like those of many whitebark pines, the trunk was twisted as if in anguish, an indication of the harsh, wind-blasted environment where this hardy conifer lives. A pioneering species of sub-alpine and alpine ecosystems, the whitebark is able to grow in nearly sterile soils on exposed slopes where almost no other trees can exist. But the growth is slow. In Montana, botanists have identified 900-year-old specimens, and in Idaho's Sawtooth Mountains they have located the world's oldest recorded whitebark pine, a tree 1,260 years old.

## IDENTIFICATION

The whitebark pine's smooth, rigid needles, 1.5 to 3 inches long, grow in clusters of five near the ends of upswept branches. The bark is smooth and pale gray. Whitebark pines can grow up to 60 feet tall in moister areas, but they are usually much shorter. Constant strong winds in alpine areas can contort the trunk and cause stunting. In especially harsh environments, whitebarks often form thickets of shrublike trees called *krummbolz*.

## RANGE

The whitebark pine is found in all major mountain ranges of central and western Montana at elevations between 5,900 and 9,300 feet. The species also grows in the Rocky Mountains from Wyoming to Alberta, coastal mountain ranges of British Columbia, isolated ranges in eastern California, and the Cascades of Washington and Oregon.

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SUMIO HARADA

## CONES

The whitebark pine's purple, nearly round cones average 2.5 inches long and have thick, pointed scales. Unlike the cones of other pine species, they do not open upon drying. Their pea-sized, nutlike seeds are wingless and much larger than those of other conifers.

Whitebark pine seeds are 50 percent fat, making them an important high-calorie food for 110 wildlife species, including Clark's nutcrackers, red squirrels, black bears, grizzly bears, pine grosbeaks, and golden-mantled ground squirrels.

## ECOLOGICAL INTERACTIONS

A mutually beneficial relationship has co-evolved between the whitebark pine and the Clark's nutcracker. The bird uses its long beak to pry open cones and carries seeds to storage sites in an interior throat pouch. In years of heavy cone crops, a single Clark's nutcracker can cache nearly 100,000 seeds. The birds store the seeds in open areas with bare soils, such as burns, where the conifer thrives. Because the seeds remain viable for more than a year, those not eaten can grow and recolonize burned areas. In years of light cone crops, wildlife may eat all the seeds, leaving none for regeneration.

## WILDLIFE VALUE

Whitebark pine seeds are a favorite food of grizzlies. The bears raid squirrel middens (cone caches) containing the nutritious

nuggets. In years with heavy cone crops, the protein-rich seeds can comprise 40 percent of a bear's diet. During years of light seed production, grizzlies in Yellowstone National Park often must forage farther and at lower elevations, where they can run into trouble when near cabins, livestock, and elk hunting camps.

## STATUS

The whitebark pine is threatened by white pine blister rust and the mountain pine beetle epidemic. The conifer-killing beetles have thrived in recent years because winters have lacked the extreme low temperatures that kill them.

According to Robert Keane, a research ecologist at the U.S. Forest Service Rocky Mountain Research Station in Missoula, the whitebark pine is dying out across much of its range in Montana. The most serious declines are in and around Glacier National Park and the Blackfeet Indian Reservation, as well as in Yellowstone National Park and its surrounding environs.

In September 2009, U.S. District Court Judge Donald Molloy cited the whitebark pine decline as one reason for ordering that the roughly 600 grizzly bears in and around Yellowstone National Park be returned to the federal threatened species list, from which they were removed two years earlier. "There is a connection between whitebark pine and grizzly survival," Molloy wrote in his ruling. 🐻